

## REPLY TO WEISEL:

## From polarization to vaccination and back

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In his comment (1), Ori Weisel conducted a preregistered experiment that closely followed the methodology and analysis in our paper (2). He examined whether vaccination against COVID-19 can be understood as a social contract even given strong animosity between existing natural groups (i.e., the opposing political preferences that separate US citizens into Democrats vs. Republicans). The experiment conceptually replicated our findings and thus addressed a limitation noted in the original paper: external validity. Specifically, the study revealed that participants' natural group membership did not affect their conditional generosity toward vaccinated vs. unvaccinated others; this replicated previous findings based on artificially created group memberships. The findings therefore provide a stress test for the external validity and generalizability of the social contract hypothesis (2). While we endorse the contribution of this additional study, we would like to discuss an aspect of this issue that was not addressed by Weisel (1).

The natural groups studied by Weisel (1) are highly relevant for the COVID-19 vaccination rollout in the United States. As in real life, in Weisel's experiment, vaccination against COVID-19 is a partisan issue. Considerably more Democrats were willing to become vaccinated compared to Republicans [experiment: 83% of Democrats vs. 44% of Republicans; recent US polls (3): 86% of Democrats vs. 56% of Republicans]. Thus, the differences in political orientation intermingle with the behavior of interest. In real life, it

may be that people are aware of only one of these features: whether the other person is a Democrat or a Republican, or whether the other person is vaccinated or not. However, if these two characteristics are highly correlated, violation of the social contract may be automatically inferred based on political orientation alone, without even knowing about the other person's actual vaccination behavior. Hence, knowing that another person is a Republican may cause a Democrat, who is more likely to be vaccinated, to assume that the other person will violate the social contract by not getting vaccinated, which, in turn, decreases prosociality toward this person, even beyond group-based preferences and biases (1, 2). By contrast, Republicans may assume that fellow Republicans do not vaccinate, which eliminates the precondition for social contracts—that contributing to the social contract is morally good and a majority contribute to the contract. In sum, existing evidence suggests that the close association of the willingness to become vaccinated against COVID-19 with group membership based on political affiliation could intensify social tensions. Political divides in vaccination intentions are thus likely to amplify political polarization due to the social contract underlying vaccination behavior. It seems of utmost importance to avoid politicization of health measures, because this can increase political polarization. In turn, polarization based on health issues can undermine efforts to curb the spread of COVID-19, by large-scale vaccination.

- 1 O. Weisel, Vaccination as a social contract: The case of COVID-19 and US political partisanship. *Proc. Natl. Acad. Sci. U.S.A.*, 10.1073/pnas.2026745118 (2021).
- 2 L. Korn, R. Böhm, N. W. Meier, C. Betsch, Vaccination as a social contract. *Proc. Natl. Acad. Sci. U.S.A.* **117**, 14890–14899 (2020).
- 3 L. Hamel, A. Kirzinger, C. Muñana, M. Brodie, KFF COVID-19 Vaccine Monitor: December 2020. *KFF* (2020). <https://www.kff.org/coronavirus-covid-19/report/kff-covid-19-vaccine-monitor-december-2020/>. Accessed 6 February 2021.

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